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IDENTIFICATION OF NORTHERN AND LOUISIANA WATERTHRUSHES

Laurence C. Binford

Separation of the Northern Waterthrush *(Seiurus noveboracensis)* from the Louisiana Waterthrush *(S. motacilla)*, both in the field and in the hand, presents difficulties that are not adequately treated in either the popular or technical ornithological literature. The purpose of this article is to analyze the published identifying characters in light of my own field and museum experience.

IDENTIFICATION IN THE FIELD

Field separation of Northern and Louisiana waterthrushes is difficult for observers unfamiliar with one or both species. Once experience is gained, however, identification of *most* individuals becomes much easier. Unfortunately, the ornithological literature is confusing and misleading. Field guides vary considerably as to which characters are mentioned or stressed, and none adequately depicts the subtle differences between the two species. Most guides overemphasize the throat spotting, incorrectly describe the eyeline, and fail to mention the flank color. In the present section I will discuss each character in relation to its variability and its usefulness in the field.

SIZE

Although *motacilla* averages larger than *noveboracensis,* there is overlap in all measurements. The differences in over-all size (as expressed by the lengths of wing, tail, tarsus, and middle toe, and by weight) are so slight that only an expert birder who is very familiar with both species and has an exceptional eye for size could distinguish between even the extremes of the two species.

Bill size is a more useful field character. Compared to the Northern, the Louisiana Waterthrush has a bill that averages longer, deeper, and wider. Thus in the field the bill of the Louisiana appears large in relation to the head size and over-all size of the bird, while that of most Northerns appears "normal." Because of intraspecific variation and interspecific overlap, however, bill size is not diagnostic and can be used only as a minor aid to field identification. See section on *Identification in the Hand* for measurements of culmen and wing.

SUPERCILIARY COLOR

The eyeline of *motacilla* often is described and depicted as pure white throughout its length. Such is not the case at all. That portion of each superciliary from the bill to the anterior edge or middle of the eye is always washed with grayish-olive or grayish-buff and hence is similar to the same portion of the eyeline in *noveboracensis.* The critical part of the superciliary is from the eye back. In *motacilla* this area is a pure, gleaming white, even slightly whiter than the throat and chin, while in *noveboracensis* it is usually buffy-yellow. Unfortunately, in some Northerns, especially western birds in worn spring and summer plumage, the posterior portion of the eyeline may be so white as to be inseparable from *motacilla.* Thus any bird in which this area is yellowish or buffy must be a Northern, while an individual with pure white superciliaries could be either species but more likely a Louisiana. This field mark, then, is helpful in eliminating yellow Northerns (most of the population) and can be used as an additional, nondiagnostic aid in the identification of Louisianas.

VENTRAL STREAKING

The streaks on the underparts of the Louisiana Waterthrush are usually paler (more brownish or grayish and less blackish) and less sharply defined than in the Northern Waterthrush. This paleness in

Louisianas is due not only to a reduction of dark pigments but also to a resulting condition in which the pale ground color of the underlying feathers is allowed to show through the streaks. The streaking character may be further enhanced by the *typical* difference in ground color of the breast, sides, and belly – white in Louisianas and yellow (thus darker) in Northerns. This enhancement is not universal, since the ground color can be quite white in some Northerns and slightly buff-tinted (but not yellow) in some Louisianas.

In this streaking character we again see overlap, a few Louisianas being quite as darkly streaked as the palest Northerns. Because of this overlap and because the character at best is only relative, rather than absolute, this field mark must be used with caution and only as an additional minor aid.

Chapman (1966: 471-472) indicates that the middle of the belly is streaked in *noveboracensis* and plain in *motacilla.* While it is true that most (perhaps all) *motacilla* have immaculate bellies, so do most *noveboracensis,* the streaked condition in the latter species being the exception rather than the rule.

THROAT COLOR

Field guides often stress that the presence of throat spotting (sometimes incorrectly called "streaking") in the Northern and its absence in the Louisiana is diagnostic. Such is not the case, since a few Northerns have virtually immaculate throats, and some Louisianas have large, well-defined spots (see Fig. 1). However, at close range and at the proper angle of observation, throat spotting can be used as a percentage field character to aid in identification. The ground color of the throat is also useful, although again not diagnostic. In most Northerns the ground color is yellowish or off-white; only a few individuals have a white throat. Louisianas, on the other hand, always have pure, gleaming white throats. When a Louisiana is first observed in the field, the white throat and superciliaries stand out as the most eye-catching features, while in Northerns the human eye is not immediately attracted to these areas.

FLANK COLOR

By far the best field mark, and the only one that comes close to being diagnostic, is the ground color of the flanks and under tail coverts. In *noveboracensis* this ground color is yellowish, in some

FIGURE 1. Contrary to statements in the literature, some Louisiana Waterthrushes (left) have heavier throat spotting than some Northern Waterthrushes (right).

individuals quite yellow and in others nearly white. In *motacilla,* however, the base color of these parts is a peculiar shade variously described in the literature as clear pale buff, ochraceous buff, cream buff, pale cinnamon, or pale fawn color, the differences in terminology in part reflecting individual variation in the birds. This buff color is usually rather bright, often very bright. I have seen no specimen or example in the field that entirely lacked this color. In a very small percentage of specimens, however, this color is so pale as to be relatively inconspicuous, and extreme care must be exercised in the field (especially in relation to lighting) to distinguish between the very pale buff of some *motacilla* and the yellow of *noveboracensis.* In

the field the crissum of *motacilla* is much less useful than the flanks because the former is difficult to observe and always paler in color.

Since the ground color of the remainder of the under parts in *motacilla* is whitish (sometimes faintly tinted with buff on the belly and sides), the buff flanks form a rather conspicuous, well-defined *patch.* In those individuals of *noveboracensis* in which the ground color of the flanks is strongly yellow, the remainder of the under parts are also quite yellow, so that the two areas tend to blend together; in such cases the eyeline is also quite yellowish. Only in rare instances do the flanks of *noveboracensis* stand out as a patch, with the ground color of the rest of the under parts whitish. In these individuals, the flanks are yellow, not buff.

VOCALIZATIONS

The songs of the two species are, of course, quite distinctive, as adequately described in the literature. Unfortunately, the chances of hearing a singing waterthrush in California are remote. The literature also indicates that the call notes are slightly different, that of *motacilla* being somewhat louder, sharper, more emphatic, and more penetrating. In my opinion, however, these differences could be detected only by an expert who has made special studies of both species in the field. Also I suspect that a careful analysis of calls would reveal some overlap in the sound as detected by the human ear.

CONCLUSIONS

As can be seen from the preceding discussion, no single character is one hundred percent diagnostic. A bird that has strongly ochraceous-buff flanks or a combination of pure white eyeline (posterior part) and pale buff flanks is definitely a Louisiana. Any bird with a yellowish tint on the posterior part of the superciliaries or strong yellow on any portion of the underparts is definitely a Northern. This leaves us with the few birds that have white superciliaries, throat, breast, and belly combined with flanks that are so pale that the exact color cannot be determined in the field. For such individ-

uals, a combination of all characters will probably enable identification by the more experienced birder and under the best conditions of observation. The beginning birder should not attempt identification of such a bird. In *motacilla* the bill averages larger, the throat is usually unspotted, the streaks below are usually broader and paler, and the over-all size is usually very slightly larger.

In practice, birds that are of doubtful identity usually prove to be Northerns. The situation is one in which a birder might be tempted to make Northerns into Louisianas, but when a Louisiana is finally seen, its identity is rather obvious.

IDENTIFICATION IN THE HAND

The same characters used in the field may also be used for identification in the hand. The colors of the flanks and posterior portion of the eyeline are again the most reliable criteria. Close inspection of the superciliaries, however, reveals in some individuals a faint edging or wash of olive on some feathers, which is not visible in the field. Throat spotting and the color of the ventral streaks become somewhat more useful in the hand.

SIZE

Sex for sex comparison of specimens shows overlap in all dimensions (the apparent gap in culmen length between females probably would be bridged by additional specimens). Since live waterthrushes cannot be sexed except by the presence of a brood patch or cloacal protuberance, attributes unlikely in nonbreeding individuals, measurements become even less useful, female Louisianas overlapping greatly with male Northerns. Nevertheless, certain dimensions, notably the lengths of the wing and culmen, are helpful.

Following are the measurements (mm) that I have taken from specimens in the California Academy of Sciences and University of California Museum of Vertebrate Zoology at Berkeley. It should be

noted that the sample sizes are small, especially for *motacilla*, and therefore might not represent the extremes for the species. The culmen was measured from the tip to the anterior extremity of the nostril, using sharply pointed dividers. The wing was measured along the chord. The sample sizes, extremes, and means are presented:

noveboracensis : wing (N=27), 72.1-79.1 (75.1); culmen (N=26), 9.0-10.5 (9.8).
noveboracensis : wing (15), 70.8-77.4 (73.9); culmen (14), 9.0-10.7 (10.0).
motacilla : wing (10) 78.0-82.8 (80.7); culmen (9), 10.2-12.2 (11.3).
motacilla : wing (5), 74.5-80.5 (77.5); culmen (6), 10.9-11.2 (11.0).

CRISSUM

There is one character that is diagnostic – the color pattern of the greater under tail coverts (see Fig. 2). The bases of these feathers correspond to the bases of the rectrices, and because of their position and shape form the outer feather row (on each side) of the crissum. They are numbered in the same manner as the rectrices, from the central pair outward. Thus the two central and longest greater under tail coverts are numbers "1." Because the sixth pair is small and difficult to examine, I am here concerned only with numbers 1 through 5.

I have examined 41 specimens of *noveboracensis* and 13 *motacilla* in which the crissum was intact. In all the Northerns, greater under tail coverts numbers 1 through 5 showed a grayish-brown sagittate mark between the light tip and the filamentous dark gray base. The apex of this sagittate mark is on the shaft and is pointed distally.

In *motacilla,* coverts 4 and 5 were always immaculate. In three specimens all the coverts were unmarked. In nine others the first pair had some brown color irregularly placed as a blotch, mottling, or narrow shaft streak, but never a sagittate mark. In three of these nine, the second pair was also irregularly marked with brown. In one of the nine, numbers 1, 2, and 3 were marked. Thus the diagnostic feathers are numbers 4 and 5, which always have a grayish-brown sagittate mark along the shaft in *noveboracensis* and are immaculate in *motacilla.* The

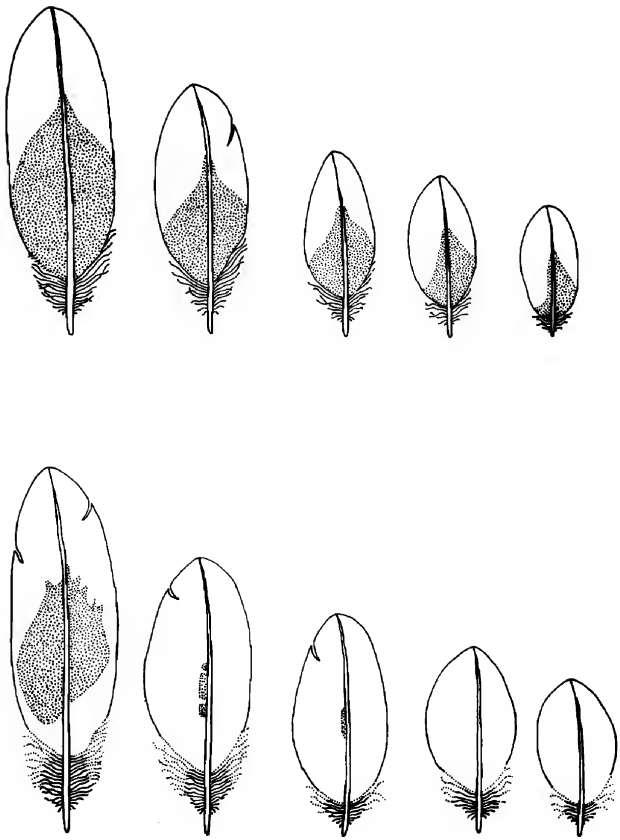

FIGURE 2. Northern and Louisiana waterthrushes can be separated in the hand by the color pattern of the first five greater under tail coverts (number 1 is the longest). In the Northern Waterthrush (top series) each of these feathers has a grayish-brown sagittate mark (stippled area) between the whitish tip and the filamentous dark gray base. In the Louisiana (bottom series) greater under tail coverts 4 and 5 are always immaculate, while 1-3 range from immaculate to irregularly marked with grayish-brown.

shape of the markings on coverts 1-3 would also appear to be useful, if not diagnostic.

Ridgway (1902: 635) uses the color of the under tail coverts as a key character separating the two species. However, he describes the coverts of *motacilla* as "buffy whitish or pale buff, without grayish brown or olive base," making no mention of the irregular dark markings often present in this species.

ADDITIONAL CHARACTERS

The literature mentions three other characters supposedly separating the species, but none holds true. In his key to the genus, Sharpe (1885: 339) states that the axillaries of *motacilla* are "pale fulvous," while those of *noveboracensis* are "dark brown." In his description of *motacilla* (p. 343), however, he describes the axillaries as "pale brown." I can see no consistent differences between the species in the color of the axillaries.

Sharpe (1885: 342, 345) also indicates a difference in the color of the bases of the feathers of the concealed coronal patch: whitish in *motacilla* and yellowish-buff in *noveboracensis.* My inspection indicates that on the average these feathers in *motacilla* are less yellow, being either whitish or more heavily tinged with cinnamon. This difference, however, is so difficult to detect, so variable, and of such a slight magnitude as to be of little value.

Peterson (1947: 204) describes *motacilla* as a "grayer bird." Possibly he is referring to the under parts, which, however, would be described as paler, not grayer. The upper parts show no consistent differences, there being considerable individual variation.

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THE DISTRIBUTION OF CERTAIN LARGE GULLS *(LARUS)* IN SOUTHERN CALIFORNIA AND BAJA CALIFORNIA

Pierre Devillers, Guy McCaskie and Joseph R. Jehl, Jr.

INTRODUCTION

In the course of investigating the relationships and plumage characters of the large gulls of western North America (Devillers, in prep.) a number of specimens had to be examined, and distributional data checked. Also, field studies, particularly in the San Diego region, northern Baja California, and the Salton Sea, have resulted in a better understanding of the distribution of some species. In this paper we summarize available data on winter distribution, timing of migration, abundance, age ratios, and habitat selection of the Glaucous Gull *Larus hyperboreus,* Thayer's Gull *Larus thayeri*, Yellow-legged Western Gull *Larus occidentalis livens,* Western Gull *Larus occidentalis occidentalis* and *L. o. wymani,* Glaucous-winged Gull *Larus glaucescens,* and Mew Gull *Larus canus brachyrhynchus.*

The following collections have been examined, and are indicated by abbreviations: Museum of Vertebrate Zoology, Berkeley (MVZ), Los Angeles County Museum (LACM), University of California at Los Angeles (UCLA), San Bernardino County Museum (SBCM), and San Diego Natural History Museum (SDNHM). All the specimens discussed were seen by Devillers, and most also by Jehl and McCaskie. Localities mentioned in the text are shown in Fig. 1. Unless otherwise specified, observations at the Salton Sea are by McCaskie, at Guaymas, San Felipe and San Quintin, by Jean T. Craig, Xenia Devillers, Alan M. Craig and Devillers, elsewhere on the Pacific coast of the peninsula, by Jehl or Devillers. Descriptions and photographs mentioned are in the files of the San Diego Natural History Museum and of *California Birds*.

GLAUCOUS GULL

Many records of this species are unreliable because of possible confusion with pale or bleached-out Glaucous-winged Gulls (particularly second-year birds, and especially in late winter and spring) or with

partially albinistic individuals of any large species of gull (e.g. Fig. 2). Johnston (1955) described correctly the field marks of young Glaucous Gulls (sharply bicolored bill, and mottled tail), and listed 41 west coast specimen records he found acceptable. We have re-examined 16 of these: 6 are incorrectly identified (Table 1), so that the identity of other specimens in Johnston's list is suspect. In Table 1, we summarize our reassessment of Johnston's records, and present a few additional specimen records. Numerous sight records have been published, particularly in *Audubon Field Notes,* without any supporting details. Although they cannot now be assessed, a fair proportion of recent ones by competent observers are probably valid. Older sight records, such as those included uncritically by Grinnell and Miller (1944), are questionable.

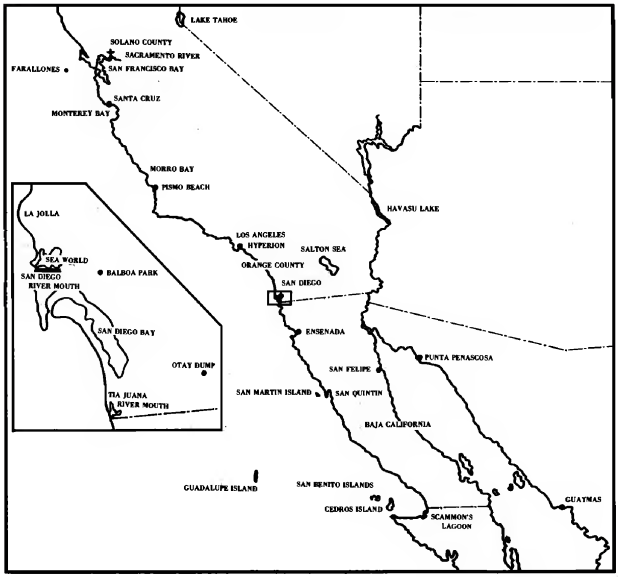

FIGURE 1. Locations mentioned in the text. Detail of the San Diego area in inset.

Map by Guy McCaskie

Table 1. Some specimens of "Glaucous" Gulls from Western North America in California collections.

Museum	Date	Locality	Identification	Age
		British Columbia		
*MVZ	17 Dec. 1925	Vancouver Island	*hyperboreus*	1st year
**MVZ	15 Mar. 1926	Vancouver Island	*hyperboreus*	2nd year
**MVZ	4 May 1944	Okanagan	*hyperboreus*	2nd year
**MVZ	8 Apr. 1924	Okanagan	*hyperboreus*	2nd year
*MVZ	7 Apr. 1938	Okanagan	*hyperboreus*	1st year
		Washington		
**UCLA	14 Jan. 1918	Tacoma	*hyperboreus*	2nd or 3rd year
**UCLA	5 May 1920	Westport	*glaucescens*	2nd year?
		Oregon		
*SDNHM	12 Dec. 1914	Sauvies Island	*hyperboreus*	1st year
		California		
**MVZ	4 Mar. 1936	Suisun, Solano Co.	*glaucescens X hyperboreus*	adult
**MVZ	26 Nov. 1952	Richmond	partial albino *(glaucescens?)*	subadult
**MVZ	20 Feb. 1939	Monterey Bay	*glaucescens* or partial albino	subadult
**MVZ	5 Jan. 1937	Monterey Bay	*hyperboreus*	1st year
†SBCM	28 Dec. 1966	Pismo Beach	*hyperboreus*	2nd year?
*LACM	28 Jan. 1921	Hyperion	*hyperboreus*	1st year
*LACM	18 Feb. 1918	Hyperion	*thayeri*	1st year
+,*LACM	24 Nov. 1915	Hyperion	*hyperboreus*	1st year
†LACM	26 Mar. 1917	Hyperion	*hyperboreus*	2nd year
**SDNHM	6 May 1919	San Diego	*glaucescens*	subadult
†SDNHM	22 Jan. 1966	San Diego	*hyperboreus*	1st year
		Inland		
+UCLA	30 Dec. 1921	Kern County	see text	subadult
†SBCM	22 Mar. 1969	Salton Sea	*hyperboreus*	1st year

*listed by Johnston as *hyperboreus*, first year
**listed by Johnston as *hyperboreus*, second year or older
†not previously published
+referred by Dwight (1925) to *leucopterus (=glaucoides)*

Despite the misidentifications of this species along the Pacific Coast, its status there is fairly clear. It is a regular winter visitor in very limited numbers along the entire coast of the United States. McCaskie has seen the species in Humboldt Bay (17 December 1962), in coastal Marin County (2 January 1970, 1 and 7 January 1961, 17 January 1962), in Monterey Bay (7 February 1971), and in Orange County (11 April 1965). In San Diego the species has been seen almost annually since the winter of 1962-63 (unrecorded only in 64-65, 66-67, and – so far – 70-71) with a maximum of three during the winter of 1967-68. The southernmost, and only Mexican records to date, are: San Quintin Bay (first year, 1 February 1970), West San Benito Island (second (?)-year, 18 January, 31 January, and 16 March 1971, Fig. 3), and Scammon's Lagoon (first-year, 19 January, 21 January, and 18 March 1971); photographs and descriptions are on file for all three.

Glaucous Gulls are usually seen among large numbers of other gulls. Most records are from refuse disposal areas (Fig. 4), but some have been found on open beaches and in sheltered bays, often when other gulls have been attracted by large supplies of "natural" food: spawning squid (La Jolla), pelagic crabs (West San Benito Island), carcasses of marine mammals (West San Benito Island, Scammon's Lagoon). Dates of first detection of San Diego individuals range from 26 December (A. M. Craig) to April (K. Fink) with one on 31 December, one in January, three in February and two in March.

Away from the ocean records are very few. McCaskie saw a first-year bird feeding on dead fish at the south end of Lake Tahoe on 2 January 1970, a first-year bird at the south end of the Salton Sea on 1 and 22 March 1969, and with Eugene A. Cardiff he found a recently dead first-year bird there on the latter date (Table 1). A specimen found dead at Buena Vista Lake in Kern County was referred to *L. glaucoides* by Dwight (1925) and subsequently to *L. hyperboreus* by Grinnell and Miller (1944). We have examined this puzzling specimen and can only assert that it is not *hyperboreus*. Its identity is uncertain, but the bird appears to be a faded or albinistic example of either *argentatus* or *thayeri*.

All individuals collected or critically observed in California are immature. The alleged specimen of an adult from Solano County MVZ no. 101338 mentioned both by Grinnell and Miller (1944) and by Johnston (1955) is a hybrid Glaucous-winged X Glaucous Gull; the mantle color is intermediate between *glaucescens* and *hyperboreus*, but closer to the former, and the primaries have extensive gray mark-

ings (Fig. 5).

There is considerable confusion as to the exact age of the immatures recorded. Johnston (1955) indicates that approximately 50% of the birds in his summary are in their second winter, and 15 individuals recorded in the San Francisco Bay area in the winter of 1968-69 were reported as "about equally divided between first-year and second-year" (Baldridge and Chandik, 1969).

Age determination of immatures is extremely difficult. The fresh first- and second-winter plumages are fairly brown and patterned but whiten quickly, mostly through fading of the brown markings. Of Johnston's nine "second year" birds, four are incorrectly identified to species, one is a pale first-winter *hyperboreus,* four are in second- or third-year plumage (British Columbia and Washington, Table 1). The only California specimen unquestionably beyond its first year is the one taken at Hyperion on 26 March 1917. All the individuals seen in San Diego in recent years appeared to be in first-winter dress, and only two of the nine seen by McCaskie elsewhere in California were possibly in their second winter.

Most of the birds occurring in the Pacific States undoubtedly belong to the race *barrovianus* from Alaska and western Canada which averages smaller than the nominate form *hyperboreus* from the eastern Canadian arctic. The extremely large first-year male (SBCM no. 4217; wing 490 mm; exposed culmen 60.8 mm) found dead at the Salton Sea is within the size range of *L. h. hyperboreus* and apparently beyond that of *barrovianus* (Bailey, 1948; Manning, Hohn, and Macpherson, 1956).

THAYER'S GULL

The criteria for identifying this gull, particularly in its immature plumages, are not generally known, so that there has been an almost complete lack of sight records. Furthermore, many specimens are misidentified and, consequently, general statements of distribution in standard check-lists cannot be taken at face value. Thayer's Gull does occur in winter along the entire coast of California (Grinnell and Miller, 1944) but its relative abundance is unstudied. Intensive study since 1967 has shown that 100 to 150 individuals winter in the San Diego area in most years. Along the Pacific coast of Baja California we have found the bird in Ensenada (three, 4 January 1970), on San Martin Island (one, 5 February, 4 March, 14 March 1971, photog-

raph), on West San Benito Island (minimum of 25 among 5000 gulls, 18 January 1971, photographs; two, 31 January 1971; three, 16 March 1971) and at Guadalupe Island (one, 21 February 1969; one, 16 April 1970; three, 30 January 1971; one, 15 March 1971). The form was not included in the Mexican check-list by Friedmann, Griscom, and Moore (1950), and the reference to the San Benito Island in the AOU Check-list (1957) may be based on a somewhat questionable, badly worn, specimen, taken by van Rossem on 20 February 1930 (UCLA no. 29802).

In San Diego, the first birds arrive in early November (earliest date: 22 October). Numbers increase gradually during November and December, peak in January and February, and drop off by early March. A few remain into early April (20 at Otay on 7 April 1968). Like Herring Gulls, most Thayer's Gulls are found at refuse disposal areas. They are scarce along the beaches and in the bays. Numbers at the Otay dump reach 50, in Balboa Park 12, and fluctuate between 2% and 5% of the Herring Gull population in midwinter. In Baja California they have been seen feeding on carcasses of marine mammals and on fish offal; the large number on San Benito was coincident with a vast emergence of pelagic crabs.

First-year birds are the most numerous in southern California and northern Baja California. The number of adults at Otay, or along the San Diego beaches, does not exceed one in five. At Balboa Park, however, Jehl often found the percentage of adults to equal or considerably exceed that of immatures, particularly in the latter part of the winter; the sample is small but consistent. All Baja California records pertain to first- (mostly) or second-year birds, except for two adults at Guadalupe Island on 30 January 1971. There may be a slight tendency for immatures to arrive earlier than adults, and the very early arrivals contain a higher proportion of second-year birds. Third-year birds are rarely seen in the region.

The Gulf of California may be part of the regular winter area of the species. Between 28 and 30 December 1970, at least 25 different individuals were seen at San Felipe (Fig. 6), with up to 15 on one day, while the total Herring Gull population never exceeded 150. The birds were loafing and feeding on the beaches, as well as feeding at sea near the fishing boats. About three-fourths were first-year birds, the rest second-year except for one adult. A first-year bird was collected at San Felipe, 26 March 1926 (SDNHM no. 10362). At the Salton Sea a first-winter bird was seen on 23 January 1971 and an adult female was collected on 22 March 1969 (SBCM no. 4225).

Phillips, Marshall, and Monson (1964) refer to this species a specimen collected at Havasu Lake (Lower Colorado River) on 13 December 1946.

YELLOW-LEGGED WESTERN GULL

The Yellow-legged Western Gull, or Yellow-footed Gull (van Rossem, 1945), is restricted to the Gulf of California, where it is common but, at least on the mainland and in northern Baja California, never seems as abundant as is *wymani* on the Pacific coast. In winter, at San Felipe, or Guaymas, these gulls frequent rocky or sandy beaches; they do not form large pure flocks but are spread out alone or in small groups, among the other gulls; and on average they stay closer to the water edge than other species, often wading in shallow water.

Grinnell and Miller (1944) list two records for the Pacific coast of California: one "certain," an adult taken 7 miles off Santa Cruz on 29 February 1936, the other possible (Hyperion, Los Angeles, 25 April 1922). Devillers has examined the first specimen (MVZ no. 101310); it is definitely not *livens*. The bill is not typical of that form and, besides, the inscription on the label "legs pale saffron yellow, tinged flesh at joints" leaves no doubt to any one familiar with the bright, deep yellow legs of adult *livens* that the bird is misidentified. Some *wymani* have legs which could be thought of as yellowish or yellow-tinged, but those shades are unlike the amazingly bright leg color of adult *livens*, a color which usually matches fairly well that of their bill. A second adult specimen (MVZ no. 101311) labeled *livens,* collected by Allan Brooks at Morro Bay on 7 January 1939, is also misidentified; the label indicates "one leg (other lost) pale cream tinged saffron." We have not examined the Hyperion bird, but Willett (1933) when he first reported it, considered the record hypothetical. The only definite record along the Pacific Coast north of the Cape District is an adult taken by van Rossem on Santa Margarita Island, Magdalena Bay, 1 March 1930 (UCLA no. 21874). However, there is a probable record for San Diego. In June 1966, Carl L. Hubbs (pers. comm.), noticed a gull with yellow legs on a pond in the enclosure of Sea World. The bird eventually became sick, was caught, and is preserved in the SDNHM collection (No. 36001, 23 June 1966). It is a subadult female, and at the time of capture the soft parts were recorded as "iris light yellow, eye-ring bright yellow, eyelids light blue grey, legs light yellow, bill yellow with orange spot on distal third of

lower bill." Those colors which can be verified on close-up slides (SDNHM collection) are strongly indicative of *livens*. In addition the measurements (wing 404, exposed culmen 54.6, height at posterior nares 19.2, height at gonys 20.9 mm.) come close to those of adult females of *livens*, and are not matched by any *wymani* in the SDNHM collection. Only the gonydeal protuberance is not as marked, but this is perhaps not surprising in a subadult. The plumage characteristics also seem to fit *livens* better than *wymani*, but we lack comparative material of *livens* at that plumage stage.

Yellow-footed Gulls were first recorded at the Salton Sea (Fig. 7) in 1965. In that year and again in 1966 single adults were observed (22 August and 5 June respectively). But since 1967 the summer presence of at first a few and later rather sizeable numbers of Yellow-footed Gulls has been a regular phenomenon. Before 1969, 6 was the highest number recorded in one day, but counts of 48 and 45 were made in 1969 and 1970. Nearly all records pertain to adults. They are most numerous in July and August, with extreme dates of 29 June and 28 September. Birds of the year first appeared in 1967 (1) and 1968 (2), but in 1969 and 1970 up to 10 were recorded (earliest date 11 July). The dates of occurrence and the age composition of the flocks clearly indicate that the Salton Sea is reached in the course of postbreeding movements. The species begins to breed in March, and by late June and early July birds have left the colonies. Outside the period of postbreeding dispersal there are only two records: single birds (second-year) were seen on 24 January 1970 and 29 April 1968. At the Salton Sea, the birds frequent bare shores, rocky jetties, and mudflats; an occasional individual has been seen in inundated fields with other gulls.

WESTERN GULL

Results of the Pacific Gull Color-banding Project of 1937-1942 (Woodbury and Knight, 1951) indicate that the northern race *L. o. occidentalis*, which breeds south along the Pacific coast to the San Francisco Bay area, is fairly migratory while the southern *L. o. wymani* breeding from Baja California north to Monterey, seems to remain close to its colonies. During that survey, *occidentalis* was not reported south of the Los Angeles area, which is also the southern limit given by Grinnell and Miller (1944). In the San Diego area, however, two birds banded as juveniles on the Farallones have been recovered during their first winter (27 October 1968, 31 October

FIGURE 2. Albinistic immature Herring Gull, San Diego, 6 December 1968.
Photo by Joseph R. Jehl, Jr

FIGURE 3. Glaucous Gull, West San Benito Island, 18 January 1971.
Photo by Joseph R Jehl, Jr

FIGURE 4. First-winter Glaucous Gull at a dump in Arcata, California, 7 December 1970.
Photo by Ron LeValley

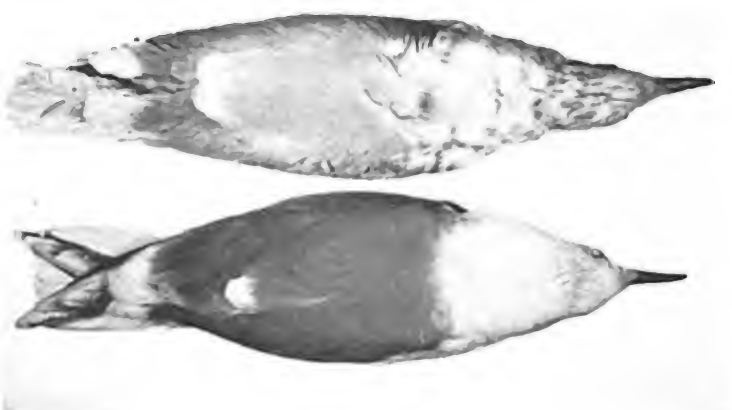

FIGURE 5. *Larus hyperboreus,* female, Barrow, Alaska, 23 September 1931, SDNHM no. 16072 (above). *L. hyperboreus X L. glaucescens* (below). *Photo by Joseph R. Jehl, Jr.*

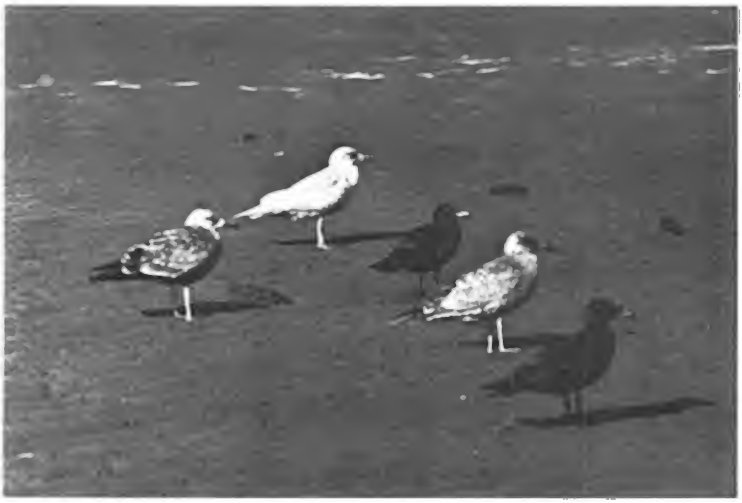

FIGURE 6. First- and very pale second-winter Thayer's Gulls with Herring and Heermann's gulls, San Felipe, 29 December 1970. *Photo by Pierre Devillers*

FIGURE 7. Yellow-footed Gull, Salton Sea, 22 July 1967. *Photo by Larry L. Tuttle*

1969, Smail, 1971), a color-banded individual of the same origin was seen by Carl L. Hubbs (pers. comm.) and we have seen a few individuals referable to this race, in first-, second- and third-year plumages. The northern form appears to be regular in small number, at least to San Diego.

Western Gulls are virtually restricted to the immediate proximity of the ocean. In midwinter in San Diego they represent about 1% of the gull population at the Otay Valley dump, but 10-15% at the Balboa Park fill, which is much closer to the sea. They share the beaches and bays with the California Gulls *Larus californicus*, Ring-billed Gulls *L. delawarensis* and Heermann's Gulls *L. heermanni*.

The Gulf of California seems to be reached only rarely, although the difficulties associated with the identification of this gull must be taken into account. A first-winter bird was observed (description on file) in San Felipe on 29 December 1970. Adults were seen in Guaymas on 15 (one) and 24 (three) March 1969. Two of the 24 March birds were courting. van Rossem (1945) reported one in the same area on 25 December 1931. At the Salton Sea, a third-winter bird was present between 17 January and 13 February 1965 and another was seen on 29 March 1969. An "immature" *L. o. occidentalis* was collected on the lower Colorado, at Lake Havasu, on 12 December 1946 (Phillips, Marshall and Monson, 1964).

GLAUCOUS-WINGED GULL

The species winters in large numbers south to the San Francisco Bay area, where it is one of the most numerous gulls, and in lesser numbers to Monterey; farther south it becomes progressively scarcer and more localized. The total San Diego population fluctuates between 100 and 300 depending on the winter (large numbers in 1964-65 and 1968-69). We have seen up to 30 in Ensenada (among 3500 gulls), 20 on Guadalupe Island, 20 on the San Benito Islands, and scattered individuals at various other points of the northern Baja California coast such as San Martin Island, San Quintin Bay, Cedros Island, Scammon's Lagoon. The species was recorded as far south as San Jose del Cabo by Grinnell (1928).

Glaucous-winged Gulls reach San Diego in November. Numbers peak in late January and February and drop off sharply in March, although they can still be sizeable in April (7 April 1968: 10 at the Otay dump). A few birds can still be found in May and June, and even through the summer.

In southern California, this gull favors disposal areas but a rather high proportion, particularly of adults, can be found along the beaches, particularly on rocky outcrops, in bays, outlets and estuaries. It is commoner at dumps situated closer to the sea than at more inland ones (2% of gull population at Balboa Park, 0.5% at Otay, in midwinter). On Baja California islands, this form sometimes outnumbers the Herring Gull locally near colonies of marine mammals.

Adults never make up more than 10% of the population in San Diego. This maximum is reached in late January and February. In Baja California, adults are rare except perhaps at Guadalupe Island (30% adults on 30 January 1971) but we have seen them as far south as Scammon's Lagoon. Limited data gathered in 1970 seem to indicate that second-winter birds reach San Diego before the first-winter individuals.

This gull may be of sporadic occurrence in the northern Gulf of California. An adult and an immature were seen near Guaymas on 16 March 1969. Previous records include one adult near Guaymas on 25 December 1937 (van Rossem, 1945) and an individual seen by van Rossem at Bluff Point, Baja California (Grinnell, 1928). Records of "a few" at San Felipe in April 1926 (Huey, 1927) and "not uncommon" at Punta Penascosa in February 1934 (Huey, 1935) may be correct, but the possibility of confusion with *thayeri* cannot be entirely eliminated. At the Salton Sea fifteen were seen between May 1964 and January 1971. Records range between 23 November and 15 June, with one in December, four in January, one in March, one in April, six in May (including five in 1969, after a winter that saw large numbers in San Diego). All but two were immatures in first- or second-year plumage. Two Colorado River records of immatures are mentioned by Phillips, Marshall and Monson (24 February 1954 and 17 November 1956).

MEW GULL

This small gull is a very common winter visitor, often the most numerous gull, in the San Francisco Bay and Monterey areas. Fair numbers penetrate inland along the lower Sacramento river (McCaskie). South of Monterey, numbers probably drop fairly quickly, although local concentrations can be misleading. In San Diego the total population probably does not exceed 100 birds, most of which occur on the sand bars at the mouth of the San Diego and Tia Juana

Rivers, and in the entrance channel of San Diego Bay. South of San Diego, we have only two records: three birds in first winter plumage in a large congregation of gulls at the fish factory outlet in Ensenada, on 4 January 1970 (Xenia Devillers and P. Devillers, description on file), and a first-winter bird near the kelp bed off west San Benito on 31 January 1971 (Raymond Gilmore and P. Devillers, descr. on file).

Individuals first reach San Diego in early November, and are not present in any numbers until the end of the month. Peak numbers are found between early January and late March, with an occasional bird staying later. The species is commonest at sand bars of river mouths, in bay entrances and in kelp beds.

In San Diego, adults considerably outnumber immatures. A typical count on 14 February 1971: mouth of San Diego River: 39 adults, 1 first-winter; mouth of Tia Juana River: 40 adults.

The Mew Gull has not yet been found in the Gulf of California. A first year bird was collected at the south end of the Salton Sea on 19 April 1969 (SDNHM no. 37202).

DISCUSSION

The data presented suggest a few general comments on gull movements.

Immature gulls migrate farther than adults, as has often been noted (Woodbury and Knight, 1951). At least 1500 miles separate the southernmost record of an adult Glaucous Gull (Vancouver Island, British Columbia, Johnston, 1955) from the southernmost record of the species (Scammon's Lagoon). In southern California and Baja California immatures of Thayer's and Glaucous-winged gulls far outnumber adults, and only immatures of the northern race of the Western Gull have been seen. All these forms are at or near the southern limit of their range. The only – and puzzling – exception is the Mew Gull. Data on age ratios of all species of gulls are needed from the entire coast.

We do not have enough data to relate timing of migration and age groups, but a tendency for second-year birds to reach San Diego before yearlings seems detectable in Thayer's and Glaucous-winged gulls. This is definitely the case with Herring Gulls but it cannot be easily documented with other abundant species (e.g. California, Ring-billed gulls) because older immatures summer in the area.

Several species that are usually considered coastal in the west occur in the northern Gulf of California. They can reach that area

either by overland flight or by a coastal route around Cape San Lucas. The tendency for unusual gulls to appear at the Salton Sea in late winter and early spring seems to support the idea that gulls which have reached the latitude of the Cape or beyond during the winter return northwards up the "wrong" sea, become "trapped" in the Gulf, and undertake an overland flight that brings them to the Salton Sea. Although this may sometimes happen, the Thayer's, Glaucous-winged and coastal Western Gulls present in the northern Gulf in late December or early January are much too early to represent northward migrants, for they appear at the same time that large numbers of southward migrants are arriving in the San Diego area. It appears therefore that Glaucous-winged and Western Gulls reach the Sea of Cortez by overland flight from the California or Baja California coast. The possibility that at least some Thayer's and Glaucous gulls have arrived via the interior of North America is supported by the apparent abundance of Thayer's Gulls at San Felipe in December 1970, as compared to San Diego, and the possible racial allocation of one Salton Sea Glaucous Gull to *L. h. hyperboreus.*

Observations of gulls and other marine birds in the Gulf of California are very much needed. As one of the seas that is completely enclosed by land to the north and has a remote southern opening, it offers, like the northern Indian Ocean and the interior seas of Asia, a perfect opportunity to study overland migratory behavior of seabirds, marine ducks and maritime shorebirds.

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SUMMARY

This paper summarizes distributional data on certain large gulls in Southern California and Baja California. Previous assessments of the status of the Glaucous Gull are inaccurate because of misidentifications; the species is a winter visitor in extremely small numbers along the coast of the Californias, south to Scammon's Lagoon, and has been recorded at the Salton Sea. Thayer's Gull has only recently begun to be recognized, but winters regularly in sizeable numbers

along the coast, south to the San Benito Islands and may also normally reach the Gulf of California. The Yellow-footed Gull, endemic to the Gulf, visits the Salton Sea after the breeding season. Northern Western Gulls *Larus occidentalis occidentalis* occur as far south as San Diego. Western Gulls *(wymani and occidentalis)* and Glaucous-winged Gulls occasionally reach the Gulf area. The Mew Gull has been found on the Pacific coast of Baja California and at the Salton Sea.

In general, immatures occur farther south than adults. It is suggested that northern gulls reach the northern Gulf of California by direct overland flight.

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A HYBRID GLAUCOUS X HERRING GULL FROM SAN DIEGO

Joseph R. Jehl, Jr.

The northward spread of the Herring Gull *(Larus argentatus)* into Iceland in the last several decades has resulted in extensive hybridization with the Glaucous Gull *(L. hyperboreus;* Ingolfsson, 1970). Hybridization between these species in North America is almost unknown, although two apparent hybrids have been collected in New Jersey in recent years (Jehl and Frohling, 1965). In the eastern Canadian arctic, where the species are widely sympatric, interbreeding is unrecorded. In the western Canadian arctic and in Alaska occasional hybridization has been inferred (Dwight, 1925; Ingolfsson, 1970). Because hybrids may provide evidence about the relationships and evolutionary history of species, they are of particular interest to biologists.

In early March 1969, a large gull of apparent hybrid origin appeared at a sanitary fill in San Diego, California (Fig. 1). It closely resembled an adult Glaucous Gull except for blackish markings on the outermost primaries. I collected the bird on 24 March and identified it as a Glaucous X Herring Gull hybrid. The specimen is deposited in the San Diego Natural History Museum (no. 37028).

Description. Similar to adult Glaucous Gull but slightly smaller (Table 1), and with distinct slaty-black markings on the outermost five primaries (Fig. 2). Adult female, weight 1365 g, ovary 14 X 10 mm, largest ovum 2 mm. Bill bright pale yellow with large red spot at gonys; iris clear yellowish, with one dark fleck in right eye and three in left; orbital ring pale yellow-orange; legs and feet bright pink; head, neck and body white, a few light brown streakings on hind neck; mantle slightly darker than in Glaucous Gull and much paler than in Herring Gull. Primaries slaty-black, not black as in Herring Gull, and extent of pattern much reduced as compared to that species; hybrid index of primary pattern = 3.6 (A. Ingolfsson in litt.; see Ingolfsson, 1970: 341); undersides of primaries whitish.

Comments. The identification of unusually-plumaged gulls is difficult but the identity of the San Diego hybrid seems obvious. In life it was noticeably larger than a Herring Gull; its measurements are intermediate between those of Herring and Glaucous gulls from the eastern Canadian arctic; and are within the range of female Glaucous Gulls from the Western Canadian arctic, which are slightly smaller

than eastern birds (Manning, Hohn, and Macpherson, 1956). In general, its coloration closely approximates that of known Glaucous X Herring Gull hybrids from Iceland. However, the primary pattern closely resembles that of Thayer's Gull *(Larus thayeri)*, even to the

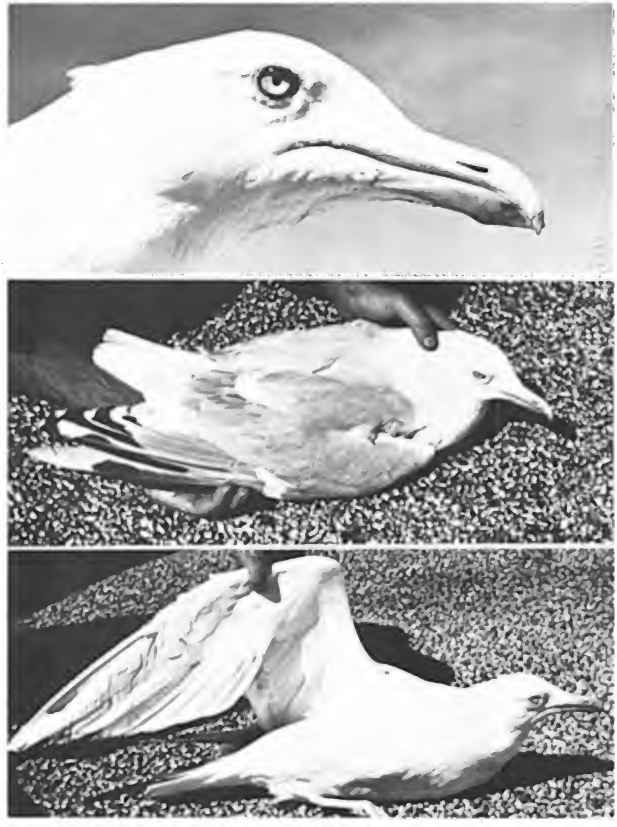

FIGURE 1. Three views of an adult Glaucous X Herring Gull collected in San Diego, California, 24 March 1969.

white undersides of the primaries. Hybrids between Thayer's and Glaucous gulls are unknown; presumably they would be smaller and darker-mantled than the present specimen and would possess deeply colored orbital rings (purplish in Thayer's) and dark irides, perhaps with extensive flecking (see Smith, 1966, for a description of variation in iris color in *thayeri)*. The specimen cannot represent a cross between Glaucous-winged *(L. glaucescens)* and Herring gulls because its mantle color is paler than in either of those species; the dark primary pattern eliminates its possiblity as a Glaucous X Glaucous-winged cross.

DISCUSSION

The precise distribution of gull colonies in western North America is imperfectly known, particularly in the critical area extending from western Alaska to northwestern Canada, but breeding ranges of the four large gulls are largely allopatric. Three species nest along the coast: Western Gulls *(L. occidentalis)* from Baja California to Vancouver Island, British Columbia; Glaucous-winged Gulls *(L. glaucescens)* from Oregon to western Alaska; Glaucous Gulls from western Alaska through the Canadian arctic and circumpolarly. Herring Gulls nest largely on inland lakes and rivers, reaching the coast only in a few areas of Alaska and northwestern Canada (A.O.U., 1957; Gabrielson and Lincoln, 1959; Fay and Cade, 1960; Williamson and Peyton, 1963; Godfrey, 1966).

Table 1. Measurements of adult female gulls. Herring and Glaucous gull measurements are from Smith, 1966, Table 5, and refer to eastern Canadian arctic populations.

	Herring Gull (57)	Hybrid	Glaucous Gull (34)
Wing (Flat)	409-423 (419.2)	438	430-454 (438.1)
Tarsus	60.0-66.2 (63.4)	64.4	60.0-72.1 (66.3)
Bill: Culmen	48.3-55.1 (51.4)	52.9	50.1-63.0 (56.3)
Bill: Anterior nares to tip	22.0-25.9 (24.4)	23.4	23.0-30.11 (26.1)
Bill: depth, post. nares	15.5-18.8 (17.0)	17.8	18.3-22.4 (20.5)

In all but one case where the ranges of two species overlap hybridization has been shown or postulated. Interbreeding of Western and Glaucous-winged gulls has been found in southern British Columbia (Pearse, 1946) and in Oregon (J. M. Scott, pers. comm.). Swarth (1934: 36-38) suggested that Glaucous-winged and Glaucous gulls hybridize on Nunivak Island, Alaska; Handley (*in* Gabrielson and Lincoln, 1959) reported a probable hybrid from St. Michael, Alaska; and specimens that almost certainly represent this cross are present in several museum collections (Jehl, pers. obs.). Where Herring Gulls

FIGURE 2. Primary pattern of Glaucous X Herring Gull.
Drawing by Anne Acevedo

reach the coast in southwestern Alaska they hybridize extensively with Glaucous-winged Gulls (Williamson and Peyton, 1963).

Herring and Glaucous gulls have not yet been found interbreeding in western North America, but specimen evidence indicates that hybridization certainly occurs in that region. Ingolfsson (1970) showed that the proportion of Herring and Glaucous gulls with aberrant primary patterns reached a peak in western Alaska. He suggested that this probably resulted from occasional crossing between Siberian Herring Gulls *(L. a. vegae)* and Glaucous Gulls in the Bering Straits region. That American Herring Gulls *(L. a. smithsonianus)* are also involved may be inferred from a hybrid (Natl. Mus. Canada no. 425558) collected in a colony of Glaucous Gulls at the mouth of the Anderson River, N.W.T., Canada; in that area both parental species occur in close proximity.

Although hybrid gulls are not well known, they are certainly more frequent along the west coast than the literature suggests. Few workers in the past several decades have been seriously concerned with problems of gull taxonomy. As a result, most collections have received inadequate study. Misidentified specimens, including adult hybrids, can be found in even the best-curated collections (Devillers et al., 1971) and serious field study backed by collecting would certainly turn up more.

In summary, isolating mechanisms are not yet well developed among the large gulls of western North America and hybridization may be expected in zones of overlap. Moreover the combined effects of climatic amelioration and the population explosion occurring among many species that inhabit dumps in winter can be expected to result in shifts in distribution, the establishment of new colonies, broader zones of overlap, and increasing probability of hybridization. Field observers should be aware of these possibilities. They can contribute significantly to our knowledge of gull relationships by documenting changes in size and distribution of gull colonies and by collecting oddly-plumaged gulls for critical examination.

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NOTES

THE WHIP-POOR-WILL IN CALIFORNIA

The Whip-poor-will *(Caprimulgus vociferus arizonae)* has been extending its range northward and westward in recent years as evidenced by records from the Sheep Mountains in southeastern Nevada (Johnson, Condor 67:93-124) and the Hualapai Mountains in western Arizona. Phillips, et al. (The Birds of Arizona, 1964) give the range in Arizona as "common summer resident of Transition and Upper Sonoran zones of southeastern and (in recent years) central Arizona; ranges west to Pajaritos Mountains and northwest less commonly (no specimen) to the Hualapai Mountains."

I obtained the first record of the Whip-poor-will in California on 2 May 1968 when two birds were heard calling at Lake Fulmor in the Transition Zone at about 5,300 feet. Lake Fulmor is in the San Jacinto Mountains near Idyllwild in Riverside County. The dominant vegetation of the area consists of relatively dense stands of mixed conifers *(Pinus lambertiana, P. coulteri, P. jeffrreyi, P. ponderosa, Abies concolor* and *Libocedrus decurrens),* oaks *(Quercus,* spp.*),* Manzanita *(Arctostaphylos,* spp.*)* and Ceanothus *(Ceanothus,* spp.*)* with some alders *(Alnus,* spp.*)* and willows *(Salix,* spp.*)* along the stream above the lake.

On 10 May tape recordings were made for documentation of the record. These recordings were reproduced on a Sound Spectograph along with recordings of *C. v. arizonae* from the Huachuca Mountains, Cochise County, Arizona and *C. v. vociferus* from New York for song analysis at the subspecific level.

The songs of *vociferus* and *arizonae* are distinguishable in at least two ways. The former has a distinctly two-parted "Poor" note and its song is more lucid than that of the latter. Figure 1 illustrates both of these characteristics quite clearly. This spectogram was made from the Whip-poor-will recording on Peterson's *A Field Guide to Bird Songs of Eastern and Central North America.* Figures 2 and 3 are representative spectograms of *C. v. arizonae* from Arizona and the California Whip-poor-will, respectively. Differences in the middle or "Poor" note of the songs are apparent in both the California and Arizona birds when compared with the New York bird. Rather than a two-syllabled note they exhibit a wavering quality in their second note. Additionally, these two individuals, like other representatives of the *arizonae* race, have a coarser (less lucid) song than the nominate race. Both of these differences are very noticeable to the ear. For these reasons I feel that the California bird can safely be assigned to the *arizonae* race.

The original spectograms are not shown in this paper because of the difficulty in obtaining prints with enough resolution for publication. These spectograms and the original tape of the California bird have been placed in the San Diego Natural History Museum.

There were at least two calling birds in the vicinity of Lake Fulmor during May and June, 1968, both of which appeared to be territorial. It could not be determined whether or not they were mated pairs or individual birds. The last bird recorded in 1968 was one that was heard on the morning of 30 August by Harry James who is the only permanent resident in the area. Mr. James says that he has

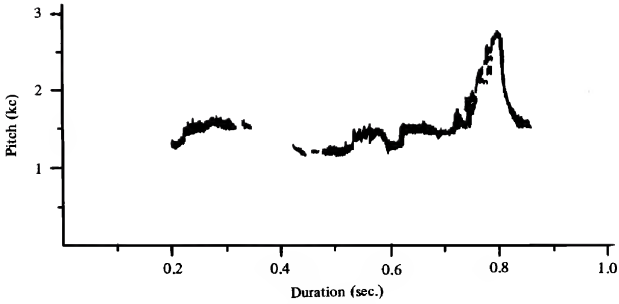

Figure 1. Spectogram of a Song of *Caprimulgus vociferus vociferus* taken from R. T. Peterson's *A Field Guide to Bird Songs*, recorded in New York. Notice the short, but abrupt drop in pitch in the middle of the "poor" note.

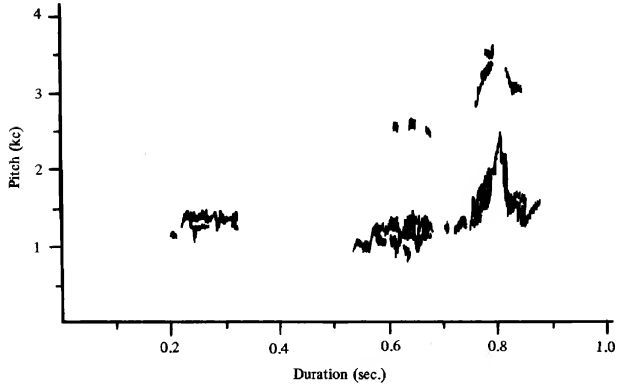

Figure 2. Spectogram of a song of *C. v. arizonae* recorded by F. Gary Stiles in the Huachuca Mountains, Arizona on 28 April, 1969. The "poor" note is considerably harsher than that of *C. v. vociferus* (Fig. 1) and definitely not two-parted. The harmonics can be ignored when making comparisons with the other two birds because the San Jacinto recording was too faint to detect any possible harmonics and the harmonics, if present, in the New York bird may have been filtered out during editing.

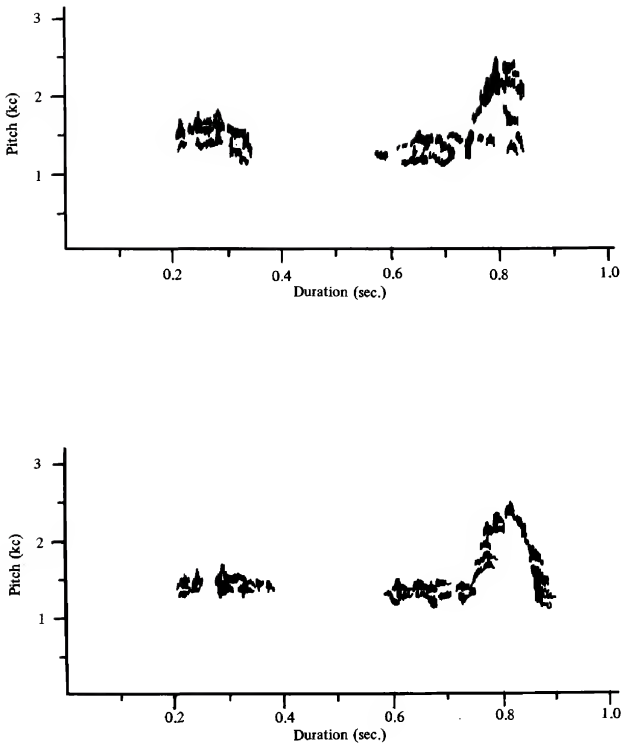

Figure 3. Two representative spectograms of a San Jacinto Whip-poor-will song recorded on 10 May 1968 by the author. The signal was rather faint and difficult to reproduce on the Spectograph, but a few spectograms were clear enough to enable one to observe the wavering, relatively harsh "poor" not characteristic of *C. v. arizonae.*

heard the Whip-poor-wills in the area each summer for a number of years prior to 1968, but not realizing the significance of the record, he never reported the information to any qualified ornithologists.

There is only one record of the species' presence in the area in 1969 even though there were many interested persons on the lookout for their return. Jay Sheppard and Charles Collins heard a bird calling on the morning of 22 June near Black Canon approximately one mile southeast of Lake Fulmor. This individual was undoubtedly out of earshot of the area where the Whip-poor-wills had been heard the previous summer.

At least one bird was present in the Lake Fulmor area in 1970. On 9 June Guy McCaskie and Shumway Suffel were able to observe an individual at close range in a flashlight beam after attracting it to a tape recording of a Whip-poor-will song. Closer scrutiny of the area around Black Mountain may reveal other individuals or even a nesting pair of Whip-poor-wills in the near future. *Lee Jones, Department of Zoology, University of California, Los Angeles, California 90024.*

EASTERN WHIP-POOR-WILL IN SAN DIEGO

Early in the morning of 14 November 1970 I discovered a male Whip-poor-will *Caprimulgus vociferus* in one of the mist nets in my yard on Pt. Loma, San Diego, California. At this time the bird was examined in detail by Virginia P. Coughran, Pierre Devillers, G. Shumway Suffel, and myself; it was measured, described, and photographed (color slide deposited in the San Diego Natural History Museum). We felt the bird might be of the eastern race, *C.v. vociferus.* To confirm this, the bird was compared directly with material in the San Diego Natural History Museum (SDNHM) by Joseph R. Jehl, Jr. It was then banded and released.

The following description of this bird is from PD's notes which were made at the time of its capture:

Upperparts: Forehead and top of head gray with an irregularly branching, velvety black midline, and a few fine, well defined, black streaks. Back and rump gray, finely speckled with paler gray, and conspicuously marked with well defined, long, fine black streaks without edgings. The rump is perhaps of a slightly lighter gray than the back. A faint buff collar on the nape. The scapulars each form an oval patch of light silvery gray with fine, irregular black, cream, buff, and gray vermiculations and bordered by large, velvety black drop-shaped spots, edged with buff and cream. The wing coverts are browner than the back, but with similar pattern, the center of each feather black; some are edged with buff. The primaries and secondaries are barred with dull reddish buff and black, the tertials paler, appearing washed with whitish. Lores tawny. Cheek darker, vermiculated reddish tawny and black. Posterior auriculars dark reddish. Tail: Central pair of rectrices grayish, finely freckled with paler gray. Seven black bars shaped as broken "V" 's. Next pair darker, browner, with dots more buff, bars heavier, more complete, and closer together. Three outer pairs black with reddish bars (spotted with black) on the edges, not meeting in the center and rather faint, white tipped (white measures 45 mm, 43 mm, and 29 mm, respectively). On the outer rectrix the black continues almost to the tip on the outer edge. Underparts: Chin and throat black, the feathers finely edged with whitish-buff and reddish. Lower throat white, (crescent-shaped), scaled with buff. Breast gray, with fine black streaking. Lower breast, belly, undertail coverts whitish pink, barred or scaled with black, the flanks grayer, and more regularly barred with dark gray. Soft parts: Iris black. Bill very small, hooked and slaty black. Toes black. Measurements: wing, 151 mm; tail, 118 mm; tarsus, 15 mm; middle toe (less claw) 15 mm.

The wing chord measurement is well outside the range of the western race, *arizonae* (162-178.5 mm for males), and near the lower limit of that of *vociferus,* the smaller eastern race (149-168.5 mm, males) (Ridgway 1914). The upperparts are distinctly grayish, and JRJ found by direct comparison with SDNHM material that the bird could be easily matched by eastern specimens; he could "see nothing about this bird that would lead [him] to place it with western birds".

Further examination of specimens in the SDNHM, and (by PD) in the Los Angeles County Museum and the University of California at Los Angeles collections indicated that, on average, *vociferus* and *arizonae* differ in three principal plumage characters: The head, back, and rump are gray on *vociferus,* and brownish on *arizonae.* The streaks on the back and rump of *vociferus* are well defined, thin, elongated, and edged with buff, while on *arizonae* these marks are usually thicker,

less elongated, and often indistinct or blurred; if distinct, they are usually edged with buff. The ground color of the central rectrices tends to pale silvery gray on the eastern birds versus pale sandy buff on the western birds. Although some individuals of either race can resemble those of the other race, many individuals are reasonably easy to separate.

An additional diagnostic character is the rictal bristles, which, as Ridgway states, are shorter and finer on *vociferus,* longer and stouter on *arizonae.* JRJ noted that the Point Loma bird had bristles resembling those of eastern birds in thickness and length, and, like those of the specimens in the local collection, they were blackish to the base. He pointed out that the bristles on the western specimens are brownish at the base, contrasting with the blacker tip. Examination of material in the L. A. County and U. C. L. A. collections showed this difference to hold in all specimens there. To my knowledge this character is not noted in the literature, but may well prove to be useful in separating these races.

In all these characters the Point Loma bird resembled extreme individuals of *vociferus,* and therefore I do not hesitate to refer it to this race.

The breeding ranges of the eastern and western Whip-poor-wills do not overlap. *C.v. vociferus* occupies most of the eastern United States, extending north to southern Canada and as far west as central Saskatchewan (Godfrey, 1966). In the U. S. the range extends west to the eastern edges of the prairie states and south to north-

Whip-poor-will *C. v. vociferus* from Point Loma, California, showing fine, black streaks on back.

eastern Oklahoma and northeastern Texas (A.O.U. 1957). It winters from eastern Mexico to Costa Rica. The range of *C.v. arizonae* extends from the mountains of Arizona, southern New Mexico, and southwestern Texas south along the Sierra Madre Occidental. Related subspecies are found in southern Mexico and Central America and closely resemble *arizonae* in voice and coloration. To my knowledge the only other extralimital record of *vociferus* in the southwest is that of a specimen taken near Roosevelt, Arizona, 4 November 1952 (Phillips, Marshall, and Monson, 1964). Previous records of Whip-poor-will in California pertain to the western subspecies (Jones, 1971).

It is interesting to note that these two forms, both having occurred now in California, have been held as specifically distinct by Davis (1962) who demonstrated

Whip-poor-will *Caprimulgus vociferus vociferus*, Point Loma, San Diego, California. *Photos by Pierre Devillers*

that the vocalizations of *vociferus* and *arizonae* are consistently different. The important differences are in the first syllable (the "WHIP" note) and in the first half of the second syllable ("POOR"). On sonograms the first syllable in the song of *vociferus* is inflected upward sharply at the beginning, then flattens out, and remains smooth (indicating a constant pitch) until the end where the sound is cut off abruptly without a change in pitch (it may include two segments); in *arizonae* this syllable is arched and composed of a series of short, peaked segments. The first half of the second syllable (the "POOR" note) of *vociferus* is characterized by about three to five low, flat humps on sonograms, representing a rising and lowering of pitch. In *arizonae* this syllable is composed of a series of sharp peaks and dips, produced by a rapidly changing pitch or vibrato sound. However, Lanyon (1968), in discussing Davis' findings, expresses the opinion that final disposition of the problem must await further studies. Careful playback experiments would undoubtedly contribute significantly to the solution of this problem.

ACKNOWLEDGEMENTS

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